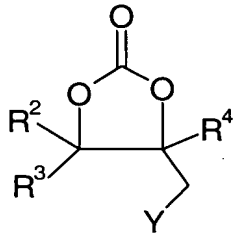
Claims

1. Process of forming an organic compound wherein

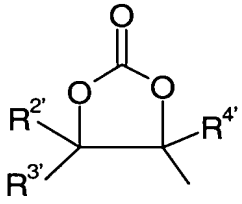
(a) a component (A) containing at least one cyclic carbonate group having the general formula (I):



(I)

wherein:

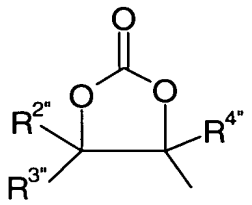
R^2, R^3 and R^4 are, each independently, chosen from hydrogen, alkyl, alkenyl, wherein alkyl and alkenyl may contain from 0 to 8 ether bridges, and/or may be substituted by one or more aryl, hydroxyl group, and/or cyclic carbonate group of formula (II)



(II)

wherein $R^{2'}$, $R^{3'}$ and $R^{4'}$ are, each independently, chosen from hydrogen, alkyl, alkenyl, wherein alkyl and alkenyl may contain from 0 to 8 ether bridges, and/or may be substituted by one or more aryl, hydroxyl group and/or Y group;

Y is an electrophilic group selected from ammonium $-N^+(R^1)\ (R^{1'})\ (R^{1''})Z^-$ and phosphonium $-P^+((O)_nR^1)\ ((O)_nR^{1'})\ ((O)_nR^{1''})\ Z^-$, wherein each n, independently, is 0 or 1 and each R^1, $R^{1'}$ and $R^{1''}$, independently, represents an alkyl optionally substituted by one or more aryl, Y group and/or cyclic carbonate group of formula (III)



(III)

wherein $R^{2"}$, $R^{3"}$ and $R^{4"}$ are, each independently, chosen from hydrogen, alkyl, alkenyl, wherein alkyl and alkenyl may contain from 0 to 8 ether bridges, and/or may be substituted by one or more aryl and/or hydroxyl group;

Z^- represents an anion;

(b) is reacted with ammonia, hydrazine or an organic compound (B) containing at least one reactive nucleophilic function X wherein each X is, independently, chosen from a primary amino or hydrazo , secondary amino or hydrazo , thiol , hydroxy, and/or oxime;

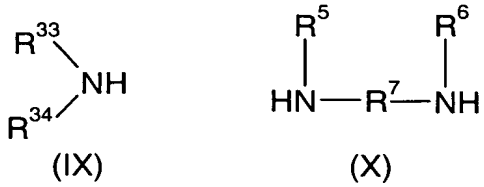
(c) such that the cyclic carbonate is opened and that an organic compound (C) containing at least one unit of the general formula -X-CO-O- is formed.

2. Process according to claim 1, wherein component (A) contains at least two carbonate cycles.

3. Process according to any of claims 1 or 2, wherein component (A) is chosen from 4-(trimethylammoniummethyl)-1,3-dioxolane-2-one, 4-(N-benzyl-N,N-dimethylammoniummethyl)-1,3-dioxolane-2-one and the tetracarbonate made starting from the tetraglycidylether of metaxylylenediamine.

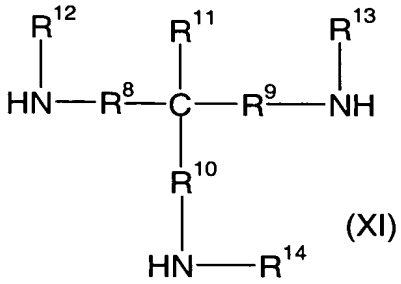
4. Process according to claim 1, wherein an organic compound (B) which contains at least one nucleophilic function X which is an amino group is used.

5. Process according to claim 4, wherein component (B) is an amine of formula (IX), (X), (XI) or (XII)

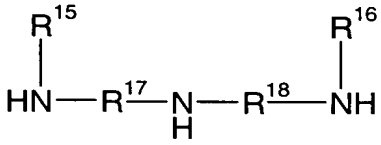


(IX)

(X)



(XI)



(XII)

wherein

R^{33} is an alkyl, optionally substituted by hydroxy, tertiary amine and/or aryl, and optionally containing from 1 to 20 ether bridges and/or from 1 to 3 tertiary amine bridges,

R^{34}, R^5, R^6, R^{12}, R^{13}, R^{14}, R^{15} and R^{16} are, independently, chosen from the group of

- hydrogen, and
- alkyl, optionally substituted by hydroxy, tertiary amine and/or aryl, and optionally containing from 1 to 8 ether bridges and/or from 1 to 3 tertiary amine bridges,
- with the proviso that, respectively, R^{33} and R^{34} , R^5 and R^6 , R^{12} and/or R^{13} and/or R^{14}, R^{15} and R^{16} may be linked together in order to form a ring,

R^7, R^8, R^9, R^{10}, R^{17} and R^{18} are, independently, chosen from alkylene, alkenylene, arylene and aralkylene chains which may contain from 1 to 8 ether bridges and/or from 1 to 3 tertiary amine bridges,

R^{11} is hydrogen or alkyl.

6. Process according to claim 4, wherein component (B) contains at least two primary or secondary amino groups.

7. Process according to claim 4, wherein compound (B) is an amine chosen amongst cyclohexylamine, N-methylbutylamine, N-methylbenzylamine, piperidine,

piperazine, morpholine, benzylamine, diethylenetriamine, ethanolamine, diethanolamine and polyoxyalkylene amines and diamines.

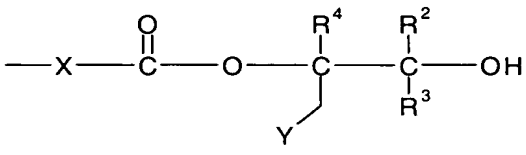
8. Process according to claim 1, wherein the reaction temperature is comprised between 0 and 120°C.

9. Process according to claim 1, wherein the amount of component (A) and compound (B) are such that the molar ratio of cyclic carbonate groups to nucleophilic groups X is from 0.5 to 2.

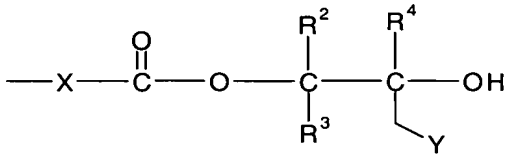
10. Process according to claim 1, wherein the reaction is made in a solvent chosen among: alcohol, ether, ester, dimethylformamide, dimethylsulfoxide, N-methylpyrolidone and water.

11. Process according to claim 1, wherein component (A) is prepared by reacting compounds (A) where the electrophilic group Y is chloride or bromide or iodide with a nucleophilic compound such as a tertiary (trialkyl)amine, or a trialkyl phosphine or phosphite.

12. Products obtainable by the process according to claim 1 comprising at least one –X-CO-O- group and a hydroxy group in β-position of said –X-CO-O- group and at least one Y-group according to at least one of the structures



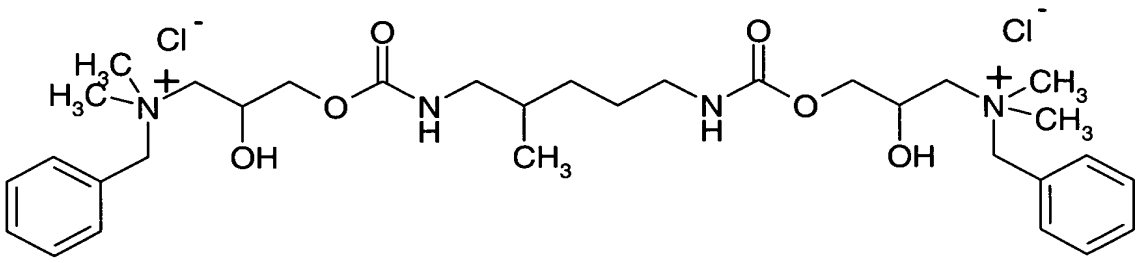
or

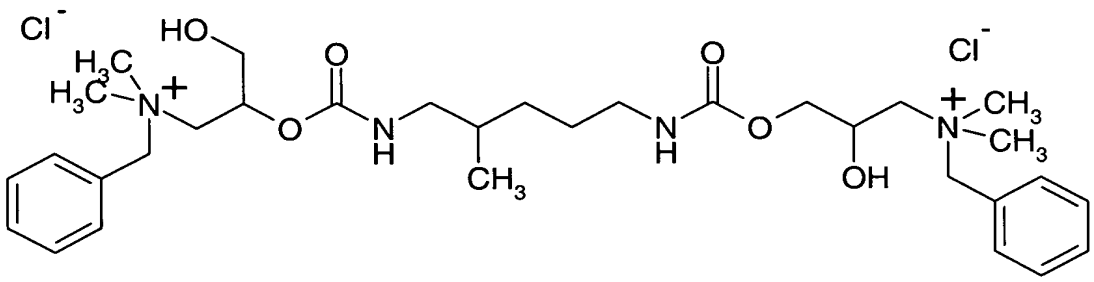


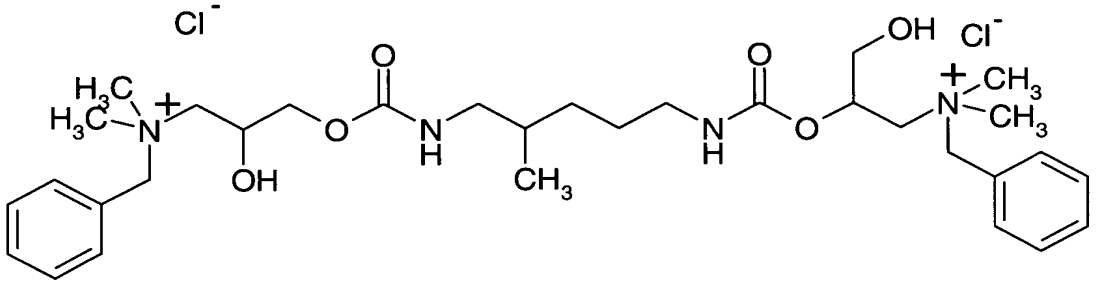
wherein X, R^2, R^3, R^4 and Y are such as defined in claim 1 or, in case R^2, R^3, R^4 and Y contain a cyclic carbonate group themselves, the structures resulting from the ring-opening of said cyclic carbonate group.

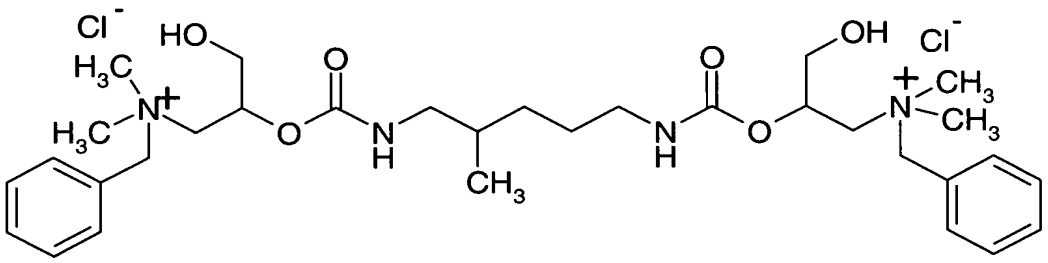
13. Products according to claim 12 wherein X is N.

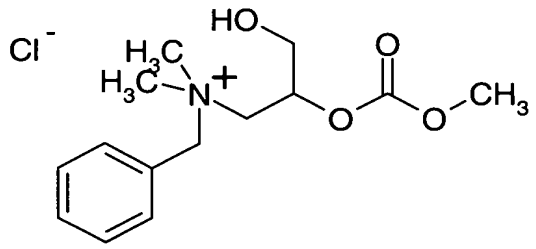
14. Products according to claim 13 responding to one of the following formula or their mixtures

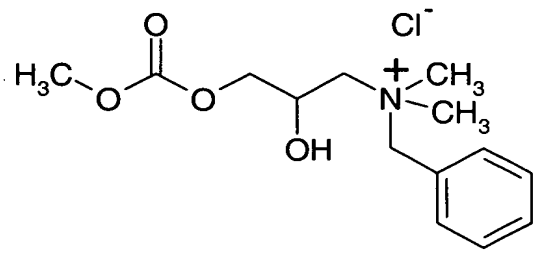









Cl-
HO
H3C
H3C
N+
O
O
O
CH3


Cl-
O
H3C
O
O
OH
N+
CH3
CH3